

Contents

<i>Preface</i>	ix
Two solitudes: Fire behavior and fire effects	ix
<i>Acknowledgements</i>	xii
<i>Tree species mentioned in the text</i>	xiii
<b>1 Fire and the boreal forest: the process and the response</b>	<b>1</b>
<b>2 Fires and climate</b>	<b>3</b>
Fire occurrence	3
Indian-caused fires	4
Lightning-caused fires	6
Airstreams and the fire season	6
Critical synoptic weather	11
<b>3 Forest fire behavior</b>	<b>22</b>
Mechanism of fire spread	24
Fuel types	25
Determining rate of spread	30
Why are there high rates of spread in the boreal forest?	31
Fire size and shape on tree seed dispersal distances	35
<b>4 Fire intensity</b>	<b>39</b>
The concept	39
Flame length and fire intensity	44
Fire behavior and fire intensity	45
Fire intensity and crown fires	47
Fire intensity and tree mortality	52
Appendix: Mechanism for scaling fire intensity to flame length	58
<b>5 Duff consumption</b>	<b>61</b>
Duff drying processes	62
Duff burning process	69
Duff consumption, plant mortality and seedbed preparation	73
	vii

Cambridge University Press  
0521349435 - Fire and Vegetation Dynamics: Studies from the North American Boreal Forest  
Edward A. Johnson  
Table of Contents  
[More information](#)

viii	<i>Contents</i>	
6	<b>Fire history and landscape pattern</b>	78
	Fire frequency from the stand origin map	78
	Age mosaic patterns in the stand origin map	91
	Fire frequency and population dynamics	93
7	<b>Fire and the population dynamics of boreal trees</b>	97
	Some population background for boreal trees	97
	Age distribution of boreal trees	101
	Delayed population recruitment	104
	Arboreal succession	105
	Appendix: Age and survivorship distributions	106
8	<b>Conclusion</b>	108
	<i>References</i>	111
	<i>Index</i>	127